DOCUMENT RESUME

ED 472 539 PS 030 939

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TITLE	Developmentally Appropriate Gardening for Young Children.
PUB DATE	2001-00-00
NOTE	6p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Childhood Needs; Cognitive Style; *Developmentally Appropriate Practices; *Early Childhood Education; Educational Objectives; Educational Philosophy; Educational Principles; *Gardening; *Young Children

ABSTRACT

Noting that the recent interest in gardening with young children has resulted in a variety of programs but little support to teachers or horticulturists on how to understand the developmental needs of children and how to adapt gardening activities to those needs, this paper presents principles and goals of developmentally appropriate gardening. The paper discusses five principles of developmentally appropriate gardening: (1) because children are active learners, the emphasis should be on hands-on interaction, play, and discovery; (2) typical child development provides a framework preparing the learning environment and planning goals; (3) it is important to provide experiences that stimulate children's development in increasingly complex and organized ways; (4) because children's development occurs more rapidly with practice, it is important to include others who influence the child's choice of activities; and (5) a variety of activities is necessary to support children who learn through the contrasted learning styles of visual, auditory, and tactile learning. Important goals of a gardening program are examined with respect to how such goals can be implemented for different age groups: (1) teaching environmental stewardship; (2) practicing personal growth and social skills; (3) providing for multidisciplinary, active learning; (4) teaching about nutrition and health; (5) providing science education opportunities; (6) providing opportunities for fun; and (7) teaching skills that can be used later in life. (KB)

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2001

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DEVELOPMENTALLY APPROPRIATE GARDENING FOR YOUNG CHILDREN

By Vicki L. Stoecklin

There has been increased interest in recent years on gardening with young children and a variety of program have been started to support different types of program goals. Whether you are working with preschool children in a community garden setting or in a child care setting, children from a summer camp starting their own gardens, or elementary aged children doing gardens on-site, the goals of a gardening program are similar among program types and the ages of children served. Goals of gardening programs include environmental stewardship, personal growth/social skills, an integrated learning environment, nutrition/health, science education, practical living skills and just plain FUN.1

How the goals for your gardening program get implemented will depend on the ages of the children in your program. Developmentally appropriate gardening programs look at how to base their activities on sound principles of child development and learning. These principles are based on years of extensive research with young children and are used by professionals in the field of early education. Many current gardening books on the market provide a variety of different types of activities however they give very little support to teachers or horticulturists on how to understand the developmental needs of children and how to adapt activities to meet their needs.

Principles of Developmentally Appropriate Gardening

The first principle and an important foundation for developmentally appropriate gardening is understanding that children are active learners. The best teaching occurs when the emphasis is more on joining the child in hands-on interaction, play and discovery than on imparting knowledge. Children have a natural curiosity that requires direct sensory experience rather than conceptual generalization. A tendency of adults is to create activities from the adult perspective rather than finding ways to adapt adult activities to children's needs. If we as adults fail to provide an engaging hands-on experience for children, they will often times find their own way to interact with the garden, often in inappropriate ways. I have experienced this phenomenon many times in the children's garden where I volunteer. When we do a garden tour, if the tour does not include enough "hands-on" experiences like stopping to collect, touch, taste and smell, I quickly lose the interest of the children and they find their own way to interact with the garden in less acceptable ways like balancing on the garden rails, running through the beds and wandering to the next available space.

The second principle of developmentally appropriate gardening is understanding that development occurs in children in an orderly sequence during the first nine years of life. All domains of development- physical, emotional, social, language and cognitive- change in a predictable way. Knowledge of typical child development for the age span that your program serves can provide a framework to guide teachers and horticulturists in

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preparing the learning environment and planning realistic goals and objectives. Age appropriate gardening activities take into account children's differing cognitive capabilities and psychological needs.

A third principle of child development that is appropriate for gardening activities is providing experiences and activities that stimulate children's development in increasingly complex and organized ways. Children below age seven or eight are extremely visual in their orientation to the world partially because they do not read or read well depending on the age of the child. A pitfall is to rely too much on verbal explanations of concepts rather than using visual representations of the same concepts, such as using pictures. I made this mistake myself with a group of eight-year-olds when I asked them to make rows for planting without a visual prop. They did not fully understand the concept much less know how to implement it in the soil as a team planting a row together. Short term memory and information processing improves in the six to eight years old in comparison with preschool children however these skills are far from mature. "For example, the adult capacity for short term memory is seven chunks or bits of information...for preschoolers- five chunks of information while 7 year-olds can usually retain six chunks of information." 2

A fourth principles of developmentally appropriate gardening looks at how children will be able to practice newly acquired skills from gardening. Since research shows that children's development occurs more rapidly with practice, how can we expand our gardening scope to include others who influence the child's choice of activities? How can horticulturists support teachers in the classroom and how, in turn, can teachers support parents who are with their children other parts of the day and evenings? Activities chosen and shared with teachers and parents must not only include information on the activity itself but why it is important and how it can be implemented. For example, it's not enough to send a child home with a seed but more appropriate to include along with the seed, an explanation about what children learn from planting seeds, a small baggie of potting soil and maybe a peat pot or information on what other types of recycled materials could be used as a pot. Many parents would not have the time or money to buy soil or pots but may participate in the activity if it is fully explained to them and they have the resources to do so. Developmentally appropriate gardening looks at how to support the child within the context of the family.

The last principle of developmentally appropriate gardening is understanding that children have preferred or stronger modalities of learning. A variety of activities will support children who learn through the contrasted learning styles of visual, auditory and tactile learners. Howard Gardner has taken this concept a step further by identifying at least eight multiple intelligence in humans. Multiple intelligence includes linguistic, logical-mathematical, musical, spatial, bodily kinesthetic, intrapersonal, interpersonal and naturalistic (the ability to read the natural environment). A variety of activities will allow children time to use their preferred modes of learning but also provide time for them to develop in areas where they might not be as strong.

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Goals of Developmentally Appropriate Gardening

Now that we have explored the philosophy of developmentally appropriate gardening, let's go back to our gardening goals and more fully discuss how these goals can be implemented for different age groups.

An important goal of a gardening program is teaching environmental stewardship. Environmental education needs to start at an early stage with hands-on experiences with nature.3 Our tendency as a society is to assume that learning starts with public school however research clearly shows that value formation begins in children ages two, three and four. It's difficult to teach children regard for nature at ages seven and eight if they haven't had any time to even explore or fully understand what the concept means. Experiences with nature have taken on new meaning in our society where children at home or at school have very little opportunity to explore the wonders of plants, bushes, trees and flowers. Many schools and childcare facilities are an asphalt jungle and most new homes in some states have very little landscaping other than sodded lawns.

Additional research in the new fields of eco-psychology and evolutionary psychology also shows that if children do not have time to explore and fully understand nature they are at danger for developing what is known as biophobia or an aversion to nature. I see this phenomenon manifested at the children's garden where I volunteer. Whether the children come from the suburbs or the inner-city schools, they have little to no understanding of the natural worlds. Their first impulse when confronted with some natural elements such as insects is to first be afraid and then to kill whatever they have observed. Children must be allowed time to interact with nature and living elements before they can understand it well enough to want to preserve it.

A second goal of a gardening program is providing activities for children to practice personal growth and social skills. Children are so proud of all of their accomplishments in the garden whether it is as simple as watering, collecting seeds or growing vegetables. Many teacher-directed public schools provide very little opportunity for children to work together yet the skills of creativity; problem solving and teamwork is needed in the real world. The garden provides many opportunities for children to work together cooperatively as a team to solve problems.

The third goal of a gardening program is providing for multidisciplinary, active learning. Gardens are unsurpassed in providing a hands-on approach to seeking information, observing changes and learning skills. Gardens are constantly changing and highly attractive learning labs. While most teachers and horticulturists tend to stick to science and ecology lessons, the garden can also be used as a springboard for math skills like charting, mapping, graphing and counting; reading and writing skills like dictation, creating signage, storybook making, and reading books; social studies skills like foods of other cultures, feeding the homeless, map-making; and art skills like designing the garden, identifying colors and patterns, creating drawings, painting, papermaking and creating collages. Each of these garden activities will be based on the differing capabilities and needs of the age child for which they were created.

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A fourth goal of a gardening program is teaching about nutrition and health. Children love to try new foods especially when they have grown the food themselves or at least been involved in collecting the food source. A gardening program allows children the opportunity to make food choices based on new experiences.

A fifth goal of gardening programs is providing opportunities for science education. Children can learn about interdependent plant and animal needs, photosynthesis, seed production, pests both harmful and beneficial, and composting.

The last two goals are really the most important. Gardening is *fun* and can be a skill which can be used later in life in many ways. I have received thank-you letters from some of the children who come to the children's garden in the summer. The letters often speak about doing gardening at home now that their interest has been sparked but the best part of the letters is that all the children talk about how much fun they had doing simple things like tasting fresh beets or cherry tomatoes, digging a sweet potato, picking berries or just watching the fish in the small pond. But, I think that my new friend Cherie says it more eloquently:

> "Dear Vicki,
> I had so much fun! The cherry tomatoes were the best! I thought the beets were kind of good. I never realy like beets that much. I'm going to ask my mom to have my own gardon. If she says yes I'll use the seed I picked."
>
> Thanks,
> Cherie
> Second grade

Footnotes:

1. Ocone, Lynn, *The National Gardening Association Guide to Kids Gardening: A Complete Guide for Teachers, Parents and Youth Leaders,* New York, Wiley Science, Editions, 1990.
2. Bredekamp, Sue and Copple, Carol, *Developmentally Appropriate Practice in Early Childhood Programs,* Washington, D.C., National Association for the | Education of Young Children, 1997.
3. Moore, Robin C. and Hong, Herb H., *Natural Learning: Creating Environments for Rediscovering Nature's Way of Teaching,*Berkeley, CA., MIG Communication, 1997

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